REMARKS

Applicant has carefully read and reviewed the Office Action mailed December 17, 2001. In response to Examiner's comments, Applicant has amended claims 1, 4, 6, 17-18, 25, 29-30, and 36-40. Claims 1-40 are pending. For the reasons set forth below, Applicant submits that the claims as amended are in condition for allowance.

Information Disclosure Statement

The Examiner has objected to the information disclosure statement filed May 30, 2000 because it fails to comply with 37 CFR 1.98(a)(2). Copies of references DE 195 19 484 A1, DE 43 41 521 A1, EP 0 113 209, EP 0 272 083, EP 0 285 705, Kirk-Othmer Concise Encyclopedia of Chemical Technology, and BFG were missing. Copies of these references are included with this office action. A copy of U.S. Patent 5,759,323 is included with this response, which corresponds to DE 43 41 521 A1 and U.S. Patent No. 6,271,342 which corresponds to DE 195 19 484 A1.

Specification

The Examiner has objected to the use of the trademark Kevlar in this application. The application has been amended to capitalize the trademark Kevlar and accompany the word with generic terminology, as required by Examiner.

Rejections Under 35 U.S.C. § 112

The Examiner has rejected claim 4 under 35 U.S.C. 112 because the specification only provides support for the fabric to be coated on one or both sides with the flexible resin. Claim 4 has been amended to more clearly reflect the specification, as suggested by Examiner. Claim 4 has also been amended in response to Examiner's objection for lack of sufficient antecedent basis.

Claim 17 was rejected for being indefinite because it was unclear if the term "pick" referred to 5-15 picks per inch or yard, etc. Claim 17 has been amended to more clearly define the term "pick" as it is set forth in the specification.

The Examiner has rejected Claim 18 on grounds that the term "method" in the preamble, and the term "surface coating", caused the claim to be vague and indefinite. Claim 18 has been

amended to include the term "structure" in the preamble, and more clearly define the term "surface coating".

Claim 29 was rejected because there was insufficient antecedent basis for the limitation "said linear hinged regions". Claim 29 has been amended in response to Examiner's objection for lack of sufficient antecedent basis. Applicants thank Examiner for her suggestions regarding this rejection.

The Examiner has rejected Claim 30 on the grounds that the phrase "hinged regions are enclosed by flexible thermoplastic" renders the claims vague and indefinite. Claim 30 has been amended to clarify how the hinged regions are enclosed by flexible thermoplastic.

Claim 36 was rejected because there was insufficient antecedent basis for the limitation "said first and second rigid areas" in lines 1-2. Claim 36 has been amended in response to Examiner's objection for lack of sufficient antecedent basis.

The Examiner has rejected Claim 37 because the scope of the claim was vague and indefinite. Claim 37 has been amended to more clearly define the scope of the claim.

Claim 38 was rejected because the claim was vague and indefinite. Claim 38 has been amended to more clearly define the scope of the claim.

Examiner has rejected claims 39 and 40 under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. Claims 39 and 40 have been amended to more clearly define the scope of the claim.

Rejections Under 35 U.S.C. § 102(b)

Claims 1-2 and 17-19.

The Examiner has rejected claims 1-4, 7, 12, 13, 18-20, 22-24, 39 and 40 under 35 U.S.C. §102(e) as being anticipated by Kaplo (U.S. Patent 6,294,729). Kaplo shows a two layer structure with the metal fabric layered onto the PVC as a structural member. The layered structure of Kaplo is very different than a composite material of the present invention. In the present invention, the fabric is embedded into the plastic and coats the fabric.

Claim 1 has been amended to clarify Applicant's invention. Claim 1, recites, a hinged, composite structure comprising a fabric embedded into a first rigid thermoplastic composite area and a separate rigid thermoplastic composite area, said areas adjoining through at least one flexible hinged region permitting rotation of the first rigid area relative to the second rigid area

about the hinged region, wherein the first rigid area and the second rigid area include bends at pre-determined distances from the hinged region. This configuration provides for typically linear flexible regions that permit the rigid areas to rotate relative to each other so that the hinged member can be bent or folded into a complex profile.

Applicants assert that Kaplo teaches a structure having a PVC layer and a separate metal fabric layer. The metal fabric is layered onto the PVC. Kaplo fails to teach or disclose the composite structure resulting from the claimed assembly. More particularly, Kaplo teaches an electromagnetic interference shield including a base for securing the shield to the first body, a profile for an electrically nonconductive solid material attached to the base for contacting the second body, and an electrically conductive layer disposed on the profile (col. 3, lines 16-20). The profile and base may be an extrusion of a polymer such as a thermoplastic resin, and the conductive layer may be a metallized fabric bonded to the profile (col. 2, lines 50-53). A hinge, of a material exhibiting different flexural characteristics may be disposed between the base and the profile, either by co-extrusion or bonding (col. 3, lines 21-27). Figure 4 shows separate PVC and fabric layers that are not combined in a composite material.

The manufacture of the structure is shown at col. 5, lines 49-65 showing a PVC layer and a separate metal fabric layer. This is not a composite material. A composite is a blended combination of two materials that cooperate to provide improved properties. A description of composite material is located at page 7, lines 19-34.

In contrast, Applicant's disclosure does not teach a thermoplastic layer disposed on a separate fabric layer. Rather, the present invention discloses the composite of a glass fiber fabric reinforcing a PVC polymer phase in a true composite that has the fiber dispersed into the polymer phase (see Applicant's disclosure, page 20, lines 12-13).

Claim 1 is believed to be patentable over the cited reference for at least the reasons stated above. Claims 2-4, 7, 12, 13, 18-20, 22-24 depend from claim 1 and further define the claimed invention. For at least these reasons, claims 2-4, 7, 12, 13, 18-20, 22-24 are also believed to be patentable.

Claim 39 has been amended to clarify Applicant's invention. Claim 39 recites an exterior corner profile comprising a fabric embedded into a first rigid thermoplastic composite area and a second rigid thermoplastic composite area, said areas adjoining through at least one flexible hinged region permitting rotation of the first rigid thermoplastic composite area relative to the

second rigid thermoplastic composite area about the hinged region, wherein the profile is adapted to receive construction panels when the hinged region is rotated through a clockwise bend angle of 90 degrees. Claim 40 has been amended similar to claim 39, with the rotation being through a counterclockwise bend angle of 90 degrees. As discussed, Kaplo does not disclose or teach a fabric embedded into a first rigid thermoplastic composite area and a second rigid composite area. In the absence of the thermoplastic - fabric - thermoplastic configuration disclosed in the present invention, the physical property improvements cannot be made. The profile of the present invention has an improved appearance and weatherability. Such improvements are not taught or suggested by Kaplo. For at least these reasons, claims 39 and 40 are also believed to be patentable.

The Examiner has rejected claims 1-4, 12, and 13 under 35 U.S.C. §102(e) as being anticipated by Hannert et al. (U.S. Patent 5,997,030), hereinafter Hannert. Applicant respectfully traverses these rejections and, for the reasons set forth below, submits that the claims as amended are patentable over the cited reference.

Hannert fails to teach or disclose the structure resulting from the claimed assembly. For example, Hannert teaches an instrument panel formed to have an integral airbag cover defined by a tear strip (col. 1, lines 20-23). The tear line is preferably provided with a hinge on the side that is to be positioned vertically upwardly when installed in a vehicle. The hinge is preferably formed by attaching a fabric to the inner surface of the substrate with a portion spanning the tear line (col. 1, lines 50-55). As stated, amended claim 1 teaches that the fabric of the present invention is embedded into a first rigid thermoplastic composite area and a second rigid thermoplastic composite area, said areas adjoining through at least one flexible hinged region permitting rotation of the first rigid area relative to the second rigid area about the hinged region, wherein the first rigid area and the second rigid area include bends at pre-determined distances from the hinged region. These features of the invention are not taught or disclosed by Hannert. For at least these reasons, the structure of amended claim 1 is believed to be patentably distinct from Hannert. Claims 2-4, 12, and 13 are dependent on amended claim 1. Therefore, claims 2-4, 12, and 13 are also believed to be distinct from Hannert.

Rejections Under 35 U.S.C. § 102/103

Claim 9 is rejected under 35 U.S.C. 102(e) as anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over Kaplo. Examiner states that since Kaplo discloses the same layers desired by Applicant, i.e. an amide fabric layer coated with polyester or PVC, it is inherent that the EMI shield have the same properties as claimed in claim 9.

Claim 1, has been amended to clarify that the structure of the present invention is distinct from Kaplo in several important ways. Most notably, the present invention teaches that the fabric is embedded into a first rigid area and a second rigid area. In contrast, Kaplo teaches that the outer layer is disposed on the profile (col. 3, lines 19-20).

The hinge of the present invention is also inherently different from the teaching of Kaplo. In the present invention, the hinged region is the section of fabric not embedded into the rigid areas. In contrast, Kaplo discloses that the base and profile may be similar or distinct materials joined together by bonding. It states that a hinge of a material exhibiting different flexural characteristics may be disposed between the base and the profile, either by co-extrusion or bonding (col. 3, lines 23-28). For at least these reasons, Kaplo does not disclose the same layers desired by Applicant in amended claim 1. Since claim 9 is dependent on amended claim 1, this rejection should be withdrawn.

Rejections Under 35 U.S.C. § 103

Examiner has rejected claims 5-6, 8, 10-11, 14-17, 21, and 25-38 under 35 U.S.C. §103(a) as being unpatentable over Kaplo. Applicant respectfully traverses this rejection and, for the reasons set forth below, submits that these claims are patentable over the cited reference.

Kaplo relates to an electromagnetic interference shield to prevent ingress and egress of electromagnetic energy relative to a housing or other enclosure in which electronic equipment is disposed (Column 1, lines 16-19). Kaplo teaches an electrically conductive material with ends folded around an electrically nonconductive material (figure 2). Applicant suggests that the Kaplo disclosure would be inoperative when used in the manufacture, reconstruction or repair of residential or institutional construction. Applicant's assertion is strengthened by the fact that the profile of present invention is useful for a variety of structural applications that commonly involve joining or associating a variety of useful members. Proper function of the profile in

association with its combined members often requires specific and detailed profile shapes (specification page 4, lines 26-29).

In any case, one skilled in the art would not have been motivated to look in the field of electronics to solve a problem related to residential and commercial construction. This invention solves a longtime need for a composite structure that can be extruded into a shape that is a direct substitute for the equivalent structural member milled shape in a wood or metal structural member (specification page 4, lines 11-13). Kaplo does not satisfy this need. Moreover, these milled shapes are neither taught nor suggested by Kaplo.

Amended claims 1 and 25 are believed to be patentable over Kaplo. Claims 5-6, 8, 10-11, 14-17, 21 are dependent on amended claim 1 and claims 26-38 and dependent on amended claim 25 and further define the invention. For this reason, and those previously stated, claims 5-6, 8, 10-11, 14-17, 21 and 25-38 are believed to be patentable over Kaplo.

Conclusion

While additional features of the claims further distinguish the present invention from the cited references, a detailed discussion of these differences is believed to be unnecessary at this time in view of the basic differences described above. In view of the above, Applicant respectfully requests withdrawal of the rejections and favorable action on the merits is hereby solicited.

Should the Examiner believe a telephone interview would be helpful in resolving any issues, Applicant invites the Examiner to contact their representative at the number listed below.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE".

Respectfully submitted,

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Date

Mark DiPietro
Reg. No. 28,707
MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903
Telephone: (612) 371-5375
E-mail: mdipietro@merchant-gould.com

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification

Paragraph beginning at page 15, line 32 has been amended as follows:

Fabrics can be made from individual glass fibers, individual yarns, collections of 2 to greater than 100 individual fibers, tows, yarns or other collections. Further, the fabrics can contain non-glass fibers such as carbon fiber, [Kevlar® fiber] man-made fibers for generalized use in the industrial arts, sold under the trademark KEVLAR, metal fibers or other high performance fiber having a tensile strength approximating or greater than that of glass fiber. Such fibers can be included in a glass fiber yarn or tow or can be individually introduced into the woven or non-woven fabric at random in either the warp or weft or both. In the manufacture of non-woven fabrics, the non-woven fabric can be a single layer of randomly distributed glass fiber or yarn or multi-layer laminates of fiber or yarn distribution fabrics. Such non-woven fabrics can also include non-glass fiber incorporated with the glass fiber or between the glass fiber laminations. The glass fiber is preferably coated to encapsulate the glass in a coating. The coating increases the wetability (adjust the surface energy) of the glass fiber to render the materials more compatible or wetable with the synthetic resin or resin blend. Typical coating compositions generally contain a polymeric binder material combined with a filler, a fire retardant additive, a pigment or a plasticizer, or other typical fabric additive material. Typical binders include polymeric materials that can be dissolved or suspended in aqueous diluents including emulsion polymers such as polyvinyl chloride, polyurethane polymers, acrylic materials, ethylene/vinyl chloride copolymers, vinylidene chloride/alkylmethacrylate copolymers, vinyl chloride/vinylacetate copolymers, neoprene brand (isoprene or chloroprene) polymers, vinylacetate/alkylacrylate copolymers or any known combination thereof. Typical filler materials are commonly inorganic and include clay, calcium carbonate, talc or titanium dioxide. Fire retardant additives include chlorine containing polymers, antimony trioxide, antimony pentaoxide, aluminum trihydrate and decabromodiphenyloxide.

Paragraph beginning at page 20, line 9 has been amended as follows:

Figure 1 shows a hinged, structural member of the invention (as extruded) suitable for forming an outside corner. The hinge 107 is shown at the center of symmetry. The PVC hinged composite 100 is formed over a fabric 101 that can be [a Kevlar] man-made fibers for generalized use in the industrial arts, sold under the trademark KEVLAR, glass, cellulosic or other woven or non-woven fabric. The fabric 101 is formed into a first rigid composite area 106 and a second rigid composite area 106a by coating the fabric 101 with rigid polyvinylchloride 102 to form the composite areas 106 and 106a. At the periphery of the composite areas are folds 105 and 105a introduced into the fabric edge to ensure a smooth, non-raveling, strong composite periphery. The composite areas 106 and 106a are coextruded areas in which the rigid PVC intimately contacts and wets individual fibers in the fabric forming a strong integral composite structure. Between composite areas 106 and 106a is a region 107 comprising fabric 103 free of rigid PVC. Hinge 107 is formed by a substantially linear region separating rigid composite areas 106 and 106a wherein in one embodiment of the invention uncoated flexible fabric joins rigid composite areas 106 and 106a. In another embodiment of the invention, hinged area 107 can be coated on one or both sides with a flexible resinous sealant 104 sealing hinged area 107. Such a sealant is useful in ensuring that the fabric does not permit passage of atmospheric gases, moisture, rain, dust, pollen or other material that can penetrate and disrupt the thermoplastic-fabric bond.

Paragraph beginning at page 21, line 13 has been amended as follows:

Figure 3 shows a hinged structural member of the invention (as extruded) suitable for forming an inside corner. The hinge 107 is shown at the center of symmetry. The PVC hinged composite 300 is formed over a fabric 101 that can be [a Kevlar] man-made fibers for generalized use in the industrial arts, sold under the trademark KEVLAR, glass, cellulosic or other woven or non-woven fabric. The fabric 101 is formed into a first rigid composite area 106 and a second rigid composite are 106a by coating the fabric 101 with rigid polyvinylchloride 102 to form the composite areas 106 and 106a. At the periphery of the composite area are folds 105 and 105a introduced into the fabric edge to ensure a smooth, non-raveling, strong composite periphery. The composite areas 106 and 106a are coextruded areas in which the rigid PVC

intimately contacts and wets individual fibers in the fabric forming a strong integral composite structure. Between composite areas 106 and 106a is a region 107 comprising fabric 103 free of rigid PVC. Hinge 107 is formed by a substantially linear region separating rigid composite areas 106 and 106a wherein in one embodiment of the invention uncoated flexible fabric joins rigid composite areas 106 and 106a. In another embodiment of the invention hinged area 107 can be coated on one or both sides with a flexible resinous sealant 104 sealing hinged area 107. Such a sealant is useful in ensuring that the fabric does not permit passage of atmospheric gases, moisture, rain, dust, pollen or other material that can penetrate and disrupt the thermoplastic-fabric bond.

In the Claims

Please amend the claims as follows:

1. (Amended) A hinged, composite structure comprising a [rigid thermoplastic coated] fabric embedded into a first rigid thermoplastic composite area and a second rigid thermoplastic composite area [having at least two pre-determined rigid composite areas], said areas adjoining through at least one flexible hinged region permitting rotation of [one] the first rigid area relative to the second rigid area [another] about the hinged region, wherein the first rigid area and the second rigid area include bends at pre-determined distances from the hinged region.

4. (Amended) The structure of Claim 3, wherein said thermoplastic coated fabric is coated on both sides by said flexible thermoplastic [said flexible thermoplastic encloses said fabric], said structure being [fabric] free of rigid thermoplastic, within said flexible regions.

6. (Amended) The structure of Claim 1, wherein said [rigid areas include] bends [at pre-determined distances from said flexible regions] measure 90 degrees.

17. (Amended) The structure of Claim 14, wherein said fabric is a [5-15] 10-30 pick fabric, containing 10 to 30 bundles of fiber per each square inch.

18. (Amended) The [method] structure of Claim 14 wherein said glass fabric further comprises a thin surface coating on said glass fiber to improve wetting.

25. (Amended) A hinged profile comprising:

(a) a flexible fabric [rigid thermoplastic] coated on both sides by rigid thermoplastic [flexible fabric], the profile having at least two pre-determined, non-coplanar rigid composite areas, and

(b) at least one flexible hinged region joining said rigid areas.

29. (Amended) The profile of Claim [25] 28 , wherein said linear [,] hinged regions comprise flexible thermoplastic.

30. (Amended) The profile of Claim 29, wherein said linear, hinged regions are enclosed by a distinct layer of flexible thermoplastic.

36. (Amended) The profile of Claim 25 wherein the ratio of resin to fiber of said [first and second rigid areas] rigid composite areas comprises about 5 to 50 parts by weight of fabric and about 50 to 95 parts of resin per each 100 parts of composite by weight.

37. (Amended) The profile of Claim 25, wherein said profile comprises a sill, a jamb, a track, or a sash, wherein the sill, jamb, track or sash is part of the hinged profile.

38. (Amended) The profile of claim 25, wherein said profile comprises a hollow trim profile, wherein the hollow trim profile is part of the hinged profile.

39. (Amended) An exterior corner profile comprising a fabric embedded into a first rigid thermoplastic composite area and a second rigid thermoplastic composite area, said areas adjoining through at least one flexible hinged region permitting rotation of the first rigid thermoplastic composite area relative to the second rigid thermoplastic composite area about the hinged region, wherein the profile is adapted to receive construction panels when the hinged region is rotated [by rotating said first and second rigid areas of the structure of Claim 1 shown in Figure 1] through a clockwise bend angle of 90 degrees.

40. (Amended) An interior corner profile comprising a fabric embedded into a first rigid thermoplastic composite area and a second rigid thermoplastic composite area, said areas adjoining through at least one flexible hinged region permitting rotation of the first rigid thermoplastic composite area relative to the second rigid thermoplastic composite area about the hinged region, wherein the profile is adapted to receive construction panels when the hinged region is rotated [by rotating said first and second rigid areas of the structure of Claim 1 shown in Figure 3] through a counter-clockwise bend angle of 90 degrees.

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